



R-2000 Requirements for HVAC Contractors

In Addition to Ontario Building Code requirements, the following requirements apply to mechanical systems installations in R-2000 houses:

1. Obtain the required efficiency of mechanical equipment before quoting, ordering or installing appliances for the home.

R-2000 houses must meet a specific energy target that is defined by the HOT 2000 Energy Simulation Software. This simulation is performed by an individual know as an R-2000 Design Evaluator. ***In this simulation process the design evaluator will determine the required energy performance of the furnace, HRV, hot water supply and gas fireplace.*** In many cases they will specify commonly available equipment; in other cases the house may require the most efficient equipment available. Communicate with the evaluator to ensure the brand and model number you wish to install meets all requirements (*it is not sufficient to simply ask your supplier if their equipment meets R-2000 requirements – most equipment does – the issue is whether it is suitable for the specific house being evaluated*).

2. All space heating and cooling appliances must be sized on a room by room basis in accordance with CSA F280 – Determining the Required Capacity of Residential Space Heating and Cooling Appliances.

This is an Ontario Building Code requirement strictly enforced by the R-2000 program. The HOT 2000 simulation software can perform this calculation so check with the design evaluator to see if they are supplying the heat loss. The goal is to have the HOT 2000 heat loss / gain calculations match your calculations. Typically R-2000 houses need 25% - 30% less heating capacity and 2-% less cooling capacity than a “code built” house so be ready to downsize the furnace accordingly.

3. All space heating and cooling distribution systems must be designed and installed in accordance with recognized industry standards and good engineering practice.

The intent is to have a duct design or, in the case of hydronic systems, a hydronic heating plan for the HVAC system. There are a couple of options for heating contractors:

- Submit your own duct design to the plans evaluator and they will use it to verify the system was installed accordingly,
- Have the design evaluator complete the duct design and you install it accordingly or
- Have the design evaluator do an on-site measurement of air or water flow to each room to verify performance of the system with respect to the heat loss / gain calculations.



4. All natural gas, propane, oil-fired space and water heating equipment must be either direct-vent, induced draft or forced draft with electronic ignition and independently vented.

5. Natural gas or propane fireplaces must be direct vent.

The HOT 2000 energy simulation includes the consumption of the pilot light of gas fireplace and it makes a substantial impact on the energy budget.

Therefore contractors are strongly encouraged to find and use fireplaces that have electronic ignition.

6. Wood burning appliance must be EPA rated – there is an approved list.

When a wood burning appliance is installed the design evaluator will do a depressurization test and determine if make-up air is required.

7. Domestic Water Heaters must meet specific energy performance requirements.

Electric water heaters must standby losses less than 65 watts for a 175 liter tank or 80 watts for a 270 liter tank. Natural gas, propane water heaters must have an energy factor (EF) of no less than 0.58. Oil water heaters must have an energy factor of no less than 0.57. These water heaters are not always easy to find so be careful in quoting.

8. HRVs must be designed and installed as per CSA F326 – Residential Mechanical Ventilation Systems.

Again be careful to select and install an HRV with performance numbers (use only HVI results) equal to or better than those specified by the design evaluator. A highlight of HRV installation requirements can be found below.

9. A carbon monoxide detector is required in every home that has either a combustion appliances or an attached garage.

10. A vented range hood must be installed if there is gas range installed.

Work closely with your builder and the design evaluator to ensure all requirements are met and you will have a happy, comfortable client.